

HUBERT OTT and
THOMAS GRAU
U.S. Serial No.: 10/505,357

R E M A R K S

Reconsideration is respectfully requested in view of the amended independent claims and in view of the analysis of the prior art.

Formal Matters

The action of the Examiner in noting and correcting the typographical error on Form PTO/SB/08A is appreciated as indicated in paragraph 1 of the Office Action.

Amendment of the title of the Specification is respectfully requested. Applicants agree a more descriptive title is in order. In view of importance of the spacer as a guide piece the Applicants respectfully request amendment of the title to -- Electromagnetic Valve with Magnets and a Guide Piece Spacer--.

In reviewing the claims it was noticed dependent claims 3 and 6 did not include a period and claim 13 lacked an antecedent basis. Correction of these ministerial errors is respectfully requested.

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Prior Art

Applicants appreciate the diligent search and detailed analysis of the prior art. The prior art does not teach or suggest the Applicants' invention as claimed in the amended claims.

Applicants' invention as described in the Specification and now in the amended title pertains to a valve having particularly low noise characteristics due to its configuration and its combination as a guide piece and valve seat. The Applicants' guide piece unlike the prior art provides a guide for guiding the valve in an axial and radial direction between switch settings. Applicants' valve is also different from the prior art in utilizing a single control coil in moving the valve body in the combined guide piece and valve seat.

35 U.S.C. § 102 Claim Rejections

Original claims 1-4, 6-8, 11-13, 16-19 and 23-25 were rejected under 35 U.S.C. § 102(b) as being anticipated by Applicants' cited reference Heintz U.S. 2,983,278.

Heintz '278 is believed the most pertinent prior art as it

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includes lands 24 (Fig. 2) for guiding the slidably mounted cylindrical magnet 27 between the pair of electromagnetic coils 17 and 18. Unlike the invention Heintz '278 does not utilize a single control coil to open and close the valve (cylindrical magnet 27), nor does Heintz '278 utilize a combined guide piece and valve seat. Heintz '278 does not have a frustro conical shaped guide for guiding the valve body in an axial and radial direction and does not have an inwardly tapering guide wall that terminates in a valve seat or have a frustro spherical shaped guide and valve seat.

The patentable differences between the Applicants' invention are now included in amended independent claims 1, 25 and 26.

Claims 1, 4, 6-8, 10-11, 20 and 24-25 were rejected under 35 U.S.C. § 102(b) as being anticipated by Staiger, et al. 4,336,823 in paragraph 5 of the Office Action.

Staiger, et al. '823 utilizes a spring and a control coil to move the armature 19 to open and close the valve. The invention unlike Staiger, et al. '823 and Heintz '278 employs a single control coil to open and close the valve. The combined guide and valve seat of the invention is also patentably different than Staiger, et al. '823 in employing a single piece frustro conical shaped guide and valve seat for guiding the valve body in an axial and radial direction and in having an inwardly tapering

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guide wall that terminates in a frustro spherical shaped valve seat.

Claims 1-4, 6-8, 11, 20-22 and 25 were rejected under 35 U.S.C. § 102(b) as being anticipated by Kühl, et al. U.S. Patent 4,511,118 in paragraph 6 of the Office Action.

Kühl '118 like the other prior art discussed does not have a single control coil for moving the valve body in a tapered combined guide piece and valve seat. Kühl '118 does not provide a linear radial and axial guide of the ball 3 since the guideway 2 has to be greater than or equal to the diameter of the ball 3. Thus when the diameter of ball 3 clears guideway 2 it is no longer radially and axially guided on its way to the separate seat 7 of Kühl '118.

Applicants' invention as claimed in the independent claims not only has a single control coil but also has a single combination guide and valve seat for controlling the axial and radial position of the valve. Kühl '118 like the other prior art does not have a combined guide and valve seat for the positive axial and radial control of the valve element.

35 U.S.C. § 103 Claim Rejections

In paragraph 8 of the Office Action the Office Action the

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Examiner is correct in presuming the subject matter of the various claims was commonly owned at the time the claimed subject matter was made.

In paragraphs 9 and 10 of the Office Action claim 5 was rejected as being obvious under 35 U.S.C. § 103 over Heintz '278 in view of McMullen U.S. Patent 4,437,815 or as being obvious under 35 U.S.C. § 103 over Kühl, et al. '118 in view of McMullen '815.

McMullen '815 in combination with either Heintz '278 or Kühl, et al. '118 does not teach or disclose a combined guide and valve seat or the limitations of the base claim. In addition the McMullen '815 patent does not teach or suggest the use of plastics to produce a valve with low noise characteristics.

Claim 9 was rejected under 35 U.S.C. § 103 as being obvious over Heintz '278 in view of Tespa U.S. Patent 4,590,962 in paragraph 11 of the Office Action.

Tespa '962 alone or with Heintz '278 does not teach or suggest the novel features of the amended independent base claim of utilizing a combined guide and valve seat to provide the advantages of the invention. As a result it is believed dependent claim 9 is patentable.

In paragraph 12 of the Office Action claims 14 and 15 were rejected as being unpatentable over Heintz '278 in view of Hunt

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U.S. Patent 3,828,818.

Hunt '818 alone or with Heintz '278 does not teach or suggest the novel features of the amended independent base claim of utilizing a combined guide and valve seat to produce a valve with low noise characteristics as opposed to decreased electrical required power. As a result it is believe dependent claims 14 and 15 are patentable.

Claim 26 was rejected under 35 U.S.C. § 103(a) as being obvious and hence unpatentable over Staiger, et al. '823 in view of Hunt '818.

Claim 26 as amended is not obvious over Staiger, et al. '823 in view of Hunt '818. More particularly neither Staiger, et al. '823 nor Hunt '818 teach or suggest employing a combined valve body guide and valve seat of a frustro spherical shape to guide the valve body in operation to produce a valve with low noise characteristics. In addition Hunt '818 does not disclose the use of a first and second magnet and a single control coil to operate the valve body in the combined valve body guide and valve seat. As a result it is believed amended claim 26 is patentable.

Applicants believe all of the claims as amended are now patentable which action is respectfully requested.

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Respectfully submitted,

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